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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/553,931

01/19/2007

James Bayliss

DNI-0025

6144

23413 7590 01/27/2010  
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EXAMINER

LEE, BENJAMIN P

ART UNIT

PAPER NUMBER

3641

NOTIFICATION DATE

DELIVERY MODE

01/27/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/553,931	<b>Applicant(s)</b> BAYLISS ET AL.	
	<b>Examiner</b> BENJAMIN P. LEE	<b>Art Unit</b> 3641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/13/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's arguments regarding the restriction of process claims 1-6 and 14-18 is convincing and the restriction from Office Action dated 12/14/2009 is hereby withdrawn. All claims have been examined on the merits.

### ***Claim Objections***

2. Claim 12 is objected to because of the following informalities: The term "high" is a relative term that lacks the necessary context and/or comparison to establish what constitutes a "high" surface area. Examiner assumes that the exposed surface area of Persson constitutes a "high" amount. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims are rejected under 35 U.S.C. 103(a) as being unpatentable over Persson et al. (U.S. Patent 3,590,739) in view of Manzara et al. (U.S. Patent 5,681,904).

4. In regards to claims 1 and 7, Persson et al (henceforth referred to as Persson) disclose a signal transmission tube (col. 2, lines 33-42) comprising a reactive material ("liquid explosive", col. 2, lines 61-62) disposed within a confinement tube, wherein the reactive polymeric material is configured to leave a portion of the interior of the confinement tube unoccupied. Note that Persson teaches that the "liquid explosive" is disposed on the interior of the tube and a portion of the interior of the tube is unoccupied (open) as illustrated in figures 4-9 following. Persson fails to teach that the reactive material is a polymeric material. However, Manzara et al (henceforth referred to as Manzara) teaches using a polymer as a base for an energetic material (col. 3, lines 34-50). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to utilize any of various reactant materials on the interior of the tube of Persson including a polymer based reactant material such as described by Manzara, since a polymer provides an ideal base material for coating and distributing on a surface, providing variable consistencies etc. Further note that the "reactive polymeric material" is disposed in the "confinement tube" of Persson.

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5. In regards to claims 2 and 8, Persson discloses that the interior of the confinement tube is substantially free of pulverulent reactive material. Note that Persson teaches that the reactant material may be any of various materials including "liquid explosives". Persson teaches that the reactant material need not be pulverulent, but merely that the material adheres to the interior wall such as a liquid adherent (paint) (col. 2, lines 50-75).

6. In regards to claims 3 and 9, Persson as modified by Manzara discloses that the reactive polymeric material comprises a GAP material. Note that Persson as modified by Manzara teaches advantageously using a GAP material as the "liquid explosive".

7. In regards to claim 25, Persson as modified by Manzara discloses a GAP resin that has been cross-linked by a multifunctional dipolarophile material. Note that the reactive polymer of Manzara is disclosed as being cross-linked by a multifunctional dipolarophile material (col. 2, lines 10-45).

8. In regards to claim 5, Persson as modified by Manzara discloses forming the confinement tube and disposing a layer of "paint" on the interior surface of the confinement tube and that the paint comprises the reactive polymeric material. Note that Persson teaches that the reactive material must adhere to the interior of the tube and further that the reactive material can be a liquid explosive constituting a "paint".

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9. In regards to claim 10, Persson as modified by Manzara discloses a layer of paint on the interior surface of the confinement tube, the paint comprising the reactive polymeric material. Note that Persson teaches that the reactant material must adhere to the interior walls of the tube and may be a "liquid explosive" which constitutes a "paint" material.

10. In regards to claim 11, Persson as modified by Manzara discloses a reactive polymeric material in the form of a rod disposed within the confinement tube. Note that Persson teaches a component inside the tube that constitutes a "rod" and is coated with the reactive material. Further note that the reactive material coating is in "the form of a rod" (see Persson figures 5 or 8 and col. 3, lines 50-59).

11. In regards to claim 12, Persson discloses that the rod has a high surface area configuration, since the surface area exposed on the "rod" of Persson is relatively "high". Note that "high" is a relative term and is inherently indefinite to some degree.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Persson et al. (U.S. Patent 3,590,739) and Manzara et al. (U.S. Patent 5,681,904) as applied to claim 12 above, and further in view of Woodall et al. (U.S. Patent 6,694,886).

13. In regards to claim 6, Persson fails to teach extruding the confinement tube over an elongate rod that comprises the reactive polymeric material. However, Woodall et al

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(henceforth referred to as Woodall) teaches extruding a "confinement tube" over an interior rod like reactive material composition (col. 10, lines 28-35). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to produce the outer tube and inner "rod" member of Persson in various ways including extruding the outer tube over the rod as taught by Woodall, to streamline the process or provide a more precise engagement between the outer tube and the inner tube or rod.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Persson et al. (U.S. Patent 3,590,739) and Manzara et al. (U.S. Patent 5,681,904) as applied to claim 12 above, and further in view of Prior et al. (U.S. Patent 3,730,096).

15. In regards to claim 13, Persson fails to explicitly disclose that the rod comprises a longitudinal bore therethrough. However, Prior et al (henceforth referred to as Prior) teaches a fuse with an outer thermoplastic tube (item 5 of Prior figure 1), and an inner "rod" comprised of a reactive material (item 3) with a central longitudinal bore (item 1). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to provide the reactant material of Persson in the form of a "rod" with a longitudinal bore as taught by Prior to increase the detonation velocity.

16. Claims 14-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodall et al. (U.S. Patent 6,694,886) in view of Manzara et al. (U.S. Patent 5,681,904).

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17. In regards to claim 14, Woodall discloses a method for making a signal transmission tube comprising extruding a reactive material into a tubular form. Note that Woodall teaches extruding a core of reactive material (col. 10, lines 28-35). Woodall fails to teach that the reactive material is a polymer material. However, Manzara teaches using a polymer based energetic material (col. 3, lines 34-50). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to utilize any of various reactant materials to form the energetic "tube" of Woodall including a polymer based reactant material such as described by Manzara, since a polymer provides an ideal base material providing variable consistencies and thus allowing for a flexible and malleable design.

18. In regards to claim 15, Woodall disclose extruding a sheath over the tubular reactive polymeric material. Note that Woodall teaches that a "sheath" is co-extruded with the core material (col. 10, lines 28-35).

19. In regards to claim 16, Woodall discloses that the sheath is configured to be fractured by the reaction of the reactive polymeric material. Note that the sheath will inherently be at least partially fractured by the initiation of the reactive material in the fuse of Woodall.

20. In regards to claim 17, Woodall discloses that the sheath is configured to be consumed by the reaction of the reactive polymeric material. Note that the sheath will



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inherently be at least partially consumed by the initiation of the reactive material in the fuse of Woodall.

21. In regards to claim 18, Woodall fails to explicitly teach that the reactive polymeric material comprises a GAP material. However, Woodall as modified with the polymer reactive material of Manzara discloses a GAP material (col. 3, lines 34-50).

22. In regards to claim 19, Woodall et al (henceforth referred to as Woodall) disclose a signal transmission tube (item 36' of Woodall figure 3b) comprising a reactive material in the form of a tube (item 38). Note that the "cord" of Woodall transmits a "signal" via the explosive material tube. Woodall fails to teach that the reactive material is a polymeric material. However, Manzara teaches using a polymer based energetic material (col. 3, lines 34-50). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to utilize any of various reactant materials to form the energetic "tube" of Woodall including a polymer based reactant material such as described by Manzara, since a polymer provides an ideal base material providing variable consistencies and thus allowing for a flexible and malleable design.

23. In regards to claim 20, Woodall as modified with the energetic material of Manzara discloses that the interior the tube is substantially free of pulverulent reactive material.

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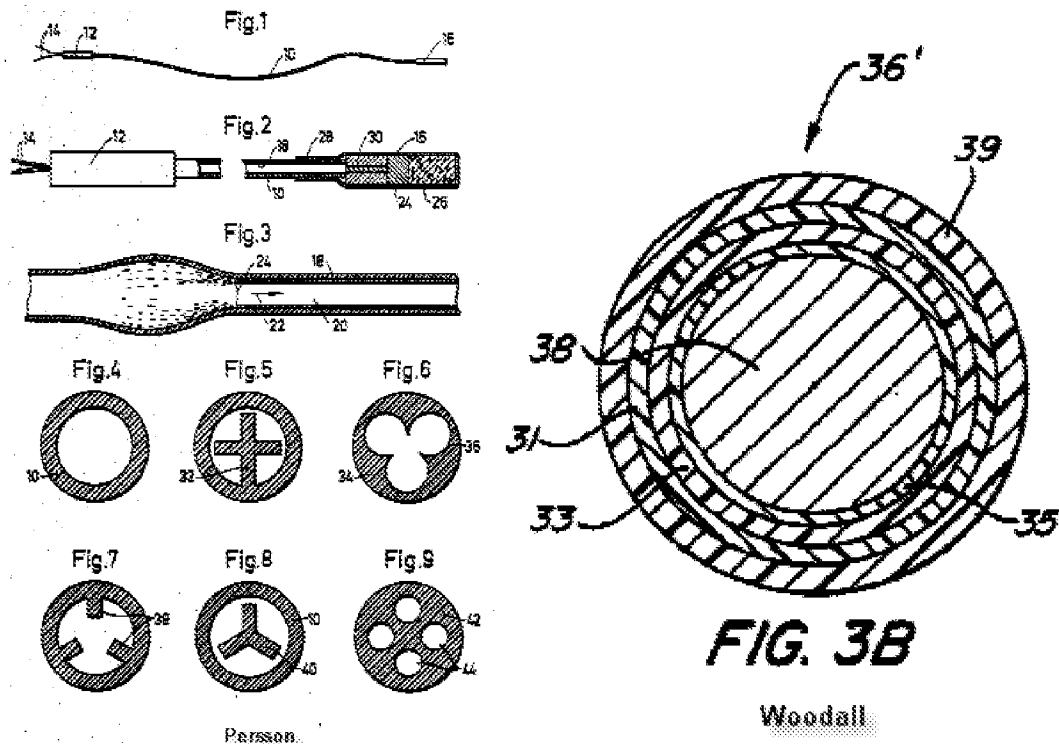
24. In regards to claim 21, Woodall discloses a sheath disposed over the reactive polymeric material (items 35).

25. In regards to claim 22, Woodall discloses that the sheath is configured to be fractured by the reaction of the reactive polymeric material. Note that the cord and thus the sheath material is fractured during ignition of the cord.

26. In regards to claim 23, Woodall discloses that the sheath is configured to be consumed by the reaction of the reactive polymeric material. Note that the sheath material of Woodall is at least partially consumed when the cord is initiated.

27. In regards to claim 24, Woodall as modified by Manzara discloses that the reactive polymeric material comprises a GAP material.

28. In regards to claim 25, Woodall as modified by Manzara discloses a GAP resin that has been cross-linked by a multifunctional dipolarophile material. Note that the reactive polymer of Manzara is disclosed as being cross-linked by a multifunctional dipolarophile material (col. 2, lines 10-45).



### Summary/Conclusion

29. Claims 1-25 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin P. Lee whose telephone number is 571-272-8968. The examiner can normally be reached between the hours of 8:30am and 5:00pm on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 571-272-6873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Benjamin P. Lee/

Examiner, Art Unit 3641